

DOCUMENT RESUME

ED 232 427

FL 013 555

AUTHOR Salager, Francoise
TITLE Compound Nominal Phrases in Scientific-Technical Literature: Proportion and Rationale.
PUB DATE [83]
NOTE 3lp.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS English for Special Purposes; French; German; *Medical Vocabulary; Nouns; Russian; Spanish; *Technical Writing; Textbooks; *Word Frequency

IDENTIFIERS *Compound Nouns

ABSTRACT

The frequency of occurrence of compound nominal phrases (CNP) in medical English literature was compared to the frequency of occurrence in general English. Ten medical English and 10 general English sample texts of 2,000 words each were selected to record and analyze the CNPs. CNPs were defined as those items made up of at least two individual lexical constituents separated by a space or a dash (e.g., vein catheter, maintenance infusion). The following data were recorded: (1) the number of CNPs consisting of 2, 3, 4, 5 and more individual lexical items; (2) the total number of CNPs; (3) the CNP average length; and (4) the proportion of CNPs. Findings include the following: the CNP average length was similar in medical English and general English; the frequency of occurrence of CNPs was significantly higher in medical English than in general English; the relative distributions of CNPs were quite different in the two types of prose; and the more specialized the text, the longer the CNPs. Because of difficulties experienced in reading material and technical English by foreign scientists, examples are included on the following: noun modification in English and Russian compounds; linking vowels in Russian word-compounds and their English equivalents; and compounds in English, Spanish, French, Russian, and German. Appended materials include a list of sample texts for medical English, general English, and technical English; a general bibliography; and examples of CNPs. (SW)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED232427

COMPOUND NOMINAL PHRASES IN SCIENTIFIC-TECHNICAL
LITERATURE: PROPORTION AND RATIONALE

By

FRANÇOISE SALAGER, M.A.; Ph.D.

ABSTRACT

This paper discusses the frequency of occurrence, average length and proportion of compound nominal phrases (CNP) in English scientific technical literature (TE) as compared to their frequency in General English (GE). To this end, the CNPs in a linguistic corpus of ten TE and ten GE texts of two thousand words each have been analyzed. A t-test has been performed and the following results have been obtained: a) CNPs are significantly more numerous in TE than in GE; b) although the CNP average length (i.e., the number of lexemes involved in each CNP) is essentially the same in both kinds of prose (2.61 vs. 2.51), their relative distribution is quite different and c) the more specialized the texts, the more frequent and the longer the CNPs.

As this morphosyntactical register marker has proved to present (for foreign scientists) a major difficulty in the reading of TE literature and to hinder considerably the overall comprehension of the text, we further elaborated on the linguistic and extralinguistic reasons for using CNPs in technical writing, carrying out

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- * This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Françoise Salager

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

FL013555

a morphological comparative study with CNPs in French, Russian and Spanish scientific prose.

The principle of economy inherent to technical writing makes itself clearly felt in the intensive spread of compound nominal phrases also called noun strings, -pliologs (Palmer 1968: 72), or complex lexical items constructed from simple ones in which two or more units are juxtaposed. Politzer (1972: 130) defines them as "the process of creating new words from elements which, by themselves, are also independent words".

According to Bartolić (1978: 257) "... this structure is one of the most (if not the most), dynamic and flexible of all structures that are used in technical - language". In this article, we will refer to them as CNP.

The shortest CNPs are essentially binary in character, i.e., they consist of the conjunction of exactly two stems (under/go, up/on, brain/stem). When more than two stems are involved, the resulting unit may be broken down into a series of binary components as well, e.g.,

| non-linear | | refractive index |
|| ultra || | violet | | rays , || | under | | ground | | cable ||

Moreover, the CNP cannot occur as a separate utterance but is always part of a longer expression, e.g., -
conflict detouring mechanism cannot stand alone but has to be part of a longer unit.

The purpose of this paper is to discuss the frequency of occurrence of the CNPs in medical English (ME) literature as compared to their frequency of occurrence in general English (GE). To this end, 10 ME and 10 GE sample texts of 2.000 words each have been consulted (see appendices 1 and 2) and the CNPs recorded - and analyzed. Treated as CNPs were those items made up of at least two individual lexical constituents separated one from the other by a space or a dash, e.g., vein catheter, power supply, maintenance infusion, - etc.. All other binary CNPs (undertake, overrun, etc.) were disregarded.

Gerr (1942: 152) contends that these complex terms are all quite as characteristic of common everyday speech as they are of the language of science; indeed, in GE are found such expressions as parking place, coffee cup. Obviously, GE resorts to them as well, but the question is first to know whether their percentage of occurrence in technical writing is as high as it is in GE and - second, to find out whether the number of their components (i.e., the number of lexical units involved in the average CNP) equals the number of units making up the GE average CNP.

PROCEDURE

Each time a CNP was encountered in a text, the number of its lexical constituents was counted. To this end, 4 different columns have been drawn because only in extremely rare cases is a CNP made up of more than five

lexical units (cf. appendix 4 for examples). Upon completion of the text, the total number of bars in each column was counted; the average length (i.e., the average number of lexical elements entering in the composition of the whole unit) of the CNPs included in the text was computed according to the following formula:

$$\bar{w}_i = \frac{\sum n_i w_i}{\sum n_i}$$

where $\bar{w}_i$ is the CNP average length, n_i is the number of CNPs containing w_i lexical units. Thus, the sum is made over all the values of $w_i = 2, 3, 4, 5$ (or more).

The last step is then to compute the CNP general frequency of occurrence in each text and then in the whole corpus in order to determine their importance in ME and in GE. For that purpose, the formula indicated below was applied:

$$P_c = \frac{\sum n_i w_i}{2,000} \quad P_c = \frac{\sum P_{ck}}{k = 2, 3, 4, 5 +}$$

where P_c is the frequency of occurrence of CNPs in one text (2.000 words), n_i the number of CNPs containing w_i lexical units and w_i is the number of lexical units making up the CNPs. Therefore, P_c measures the proportion of words involved in all the CNPs occurring in the text. Thus, the true number of CNPs per text (of whatever length) is:

$$\frac{P_c}{w_i} = \frac{\sum n_i}{2.000} \times 100\%$$

Therefore, the percentage of CNPs in any given text is:

$$P_c = \frac{\sum n_i w_i}{2.000} \times 100\% = \frac{\bar{w}_i \sum n_i}{2.000} \times 100\%$$

In order to obtain the mean length of the CNPs as well as their proportion over the ten ME texts (20.000 words), the same procedure is applied; only the divisor changes from 2.000 to 20.000.

To sum up, for each 2.000 word-text first, and for the ten texts altogether, the following data were recorded:

- a. The number of CNPs made up of 2, 3, 4, 5 and - more individual lexical items;
- b. the total number of CNPS
- c. the CNP average length
- d. their proportion.

Finally, the same data were recorded for the GE sample texts and the results were compared with those - obtained from a sample of technical English (TE) literature (Salager: 1977).

Comparative study: CNPs in ME and in GE.-

Table 1 indicates the total number of CNPs in the ME

TABLE I

STATISTICAL DATA for COMPOUND
WORD ANALYSIS in ME LITERATURE.

Sample Text #	Σn_i^a	$\Sigma n_i w_i^b$	$\bar{w}_i^c$	$P_c\%^d$
21	23	50	2.17	2.50
22	55	127	2.31	6.35
23	96	259	2.70	12.96
28	46	117	2.54	5.84
29	89	243	2.73	12.10
30	25	64	2.56	3.20
32	94	261	2.78	13.07
33	164	421	2.57	21.07
44	55	142	2.58	7.10
46	104	269	2.59	13.47
All ten texts	751	1.953	2.55	9.76

- a Number of compound words.
- b Number of words involved in compounds.
- c Average length.
- d Percentage of compound words in text.
(or % words involved in compounds).

sample, the number of words included in the CNPs, the CNP average length and the percentage of lexical units involved in the CNP formation. These data are given for 2.000 words and over the total of 20.000 words considered. Table 2 provides the same information for GE nominal phrases.

As can be seen from Table 1 the mean length of the CNP from 2.000 words is 2.55 and their frequency counts for 9.76%. It is most interesting to note that the - four texts (N° 32, 23, 46 and 33) in which, first the CNP frequency of occurrence and second, the number of individual lexical items entering in the composition - of the whole unit happens to be the highest, deal with medical case reports and experiment results, i.e., - specialized and highly technical texts written for the specialist. This observation corresponds to the one made by Salager in her study on TE (Salager, 1977; 238). In these four texts, the mean length of the CNP is respectively 2.78, 2.70, 2.59 and 2.57, that is al most 3 which means that one single CNP is made up of at least three individual units. In these same texts, the CNPs make up respectively 13.7, 12.96, 13.47 and 21.07 of the 2.000 word-text.

In the text N° 46, 16 compounds (out of 104) are made up of 4 lexical units, 28 of 3, 2 of 5, and 1 of 7. On the contrary, in more basic texts (description/classification of symptoms and/or disease) or in textbook sample texts (texts N° 21, 30, 28, 22 and 44) the CNPs count for 2.50, 3.20, 5.84, 6.35 and 7.10 percent of the total number of words. Although their average

TABLE 2

STATISTICAL DATA for
COMPOUND WORD ANALY-
SIS in GE LITERATURE.

Sample Text #	Σn_i^a	$\Sigma n_i w_i^b$	$\bar{w}_i^c$	$P_c^d \%$
1	4	8	2.00	0.40
2	1	3	2.00	0.15
3	12	29	3.00	1.45
4	8	19	2.42	0.95
5	8	19	2.38	0.95
6	5	12	2.38	0.60
7	18	53	2.40	2.65
8	9	21	2.94	1.05
9	3	7	2.33	0.35
10	1	2	2.00	0.10
All ten texts	69	173	2.51	0.87

- a Number of compound words.
- b Number of words involved in compound words.
- c Average length.
- d Percentage of compound words in text.
(or % words involved in compounds)

length does not significantly differ from the one recorded in specialized texts (respectively 2.17, 2.56, 2.54, 2.31 and 2.58), the number of words involved in the CNPs is significantly different (50, 64, 117, 127, 142). For example, in the text N° 21, 20 CNPs are made up of 2 lexical items, 2 are made up of 3 and only 1 is made up of 4 units. In those texts, not a single CNP of 5 lexical units (or more) has been recorded.

Table 3 indicates that in a total of 20.000 words in ME, 1953 lexical units are involved in CNPs against - 3073 in TE and 173 in GE for the same amount of words. Furthermore, 751 different CNPs have been recorded in ME against 69 in GE and 1179 in TE. A t-test shows - that the statistical difference between the mean frequencies of occurrence of CNPs in ME and in GE is - significant ($P > 0.005$) although the standard devia-
tions are rather high.

Table 4 shows that their percentage of occurrence in ME amounts to 9.76 (i.e., almost 10 words out of 100 are compounds) against 12.37 in TE and 0.87 in GE - (not even one word out of 100).

This means that CNPs occur 11 times more in ME than in GE but they are still more frequent in TE. Besides, according to table 3, the CNP average length of the TE sample (2.61) might be surprising at first sight; nevertheless a closer look at table 4 indicates that ME uses 11 times more 2-word-CNPs and 6 times more 3-word CNPs than does GE. (1)

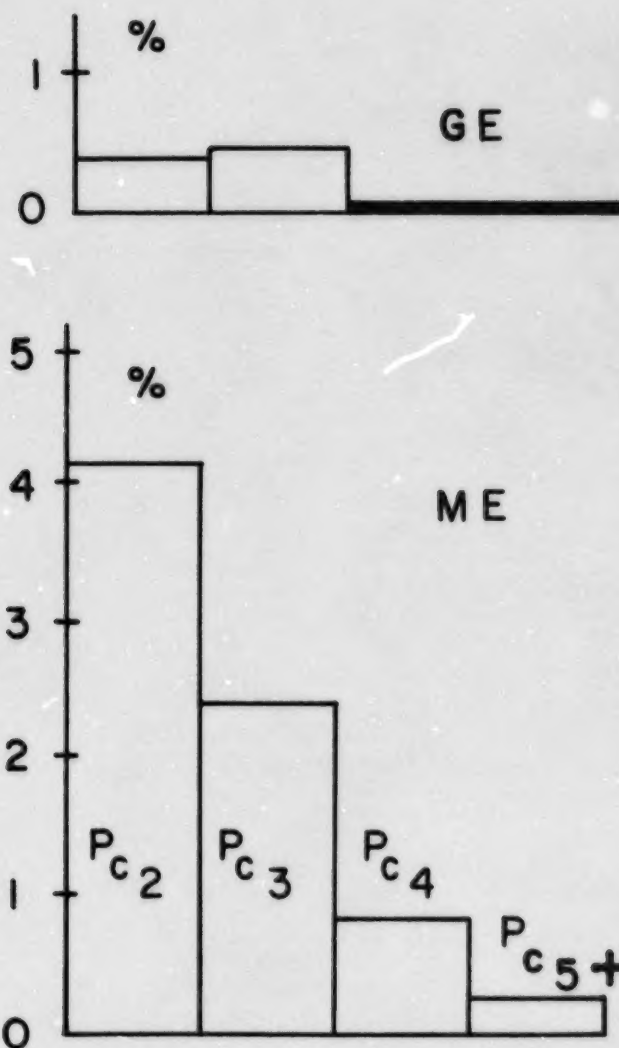
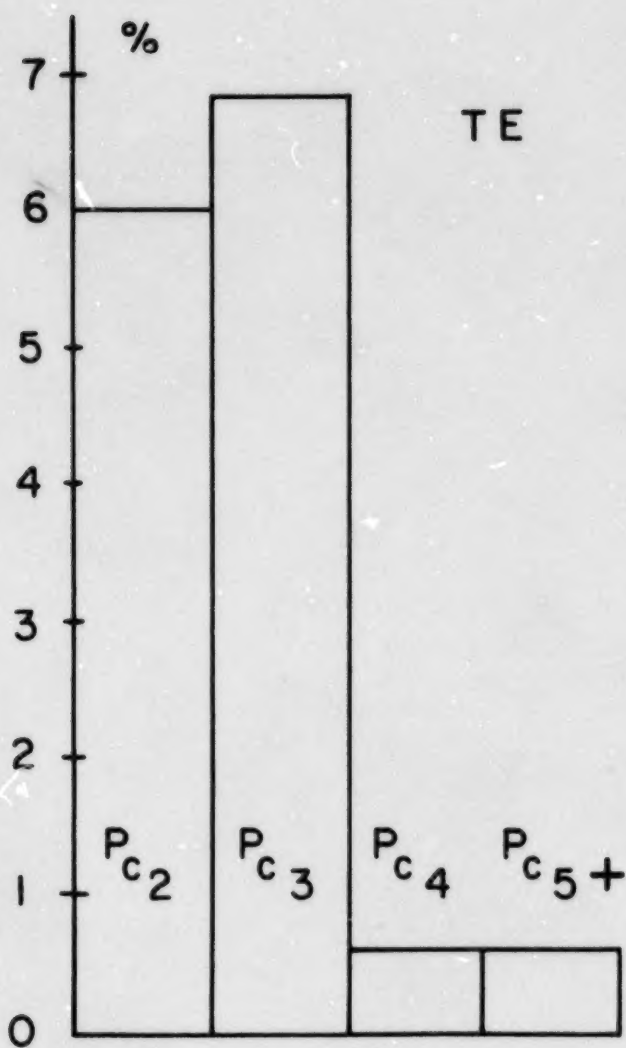
(1) As can be observed, these values are still much higher in TE than in ME which would tend to suggest that TE is even more concise than ME.

TABLE 3

**COMPARISON of DATA for TWENTY-
THOUSAND WORD SAMPLE TEXTS
in TE, ME, and GE LITERATURE.**

	Σn_i^a	$\Sigma n_i w_i^b$	w_i^c	$p_c \%^d$
TE	1.179	3.073	2.61	15.37
ME	751	1.953	2.55	9.76
GE	69	173	2.51	0.87

- a Number of compound words:
- b Number of words involved in compounds.
- c Average length.
- d Percentage of compound words in text.
(or % words involved in compound).



Graph 1. COMPOUND WORD DISTRIBUTION IN TE ME AND GE .

TABLE 4

**COMPARISON of DATA for TWENTY-
THOUSAND WORD SAMPLE TEXTS.**

	$P_c\%$ ^a	$P_{c_2}\%$ ^b	$P_{c_3}\%$ ^c	$P_{c_4}\%$ ^d	$P_{c_5}\%$ ^e	$\bar{w}_i$ ^f
TE ^g	14.11	6.05	6.84	0.61	0.61	2.61
ME ^h	9.76	4.15	2.36	0.82	0.22	2.55
GE ⁱ	0.87	0.36	0.42	0.04	0.03	2.51
Ratio $\frac{ME}{GE}$	11.22	10.92	5.62	20.50	7.33	1.00
Ratio $\frac{TE}{GE}$	17.70	15.90	16.30	46.00	20.00	1.00

a Percentage of compound words in texts.

b Percentage of two-word compound words in texts.

c Percentage of three-word compound words in texts.

d Percentage of four-word compound words in texts.

e Percentage of five (or more) - word compound words in texts.

f Average length.

Contextual assimilation, as Ovtcharenko (1970) notes, serves linguistic economy, and, in extreme cases, gives the possibility of expressing two or more ideas by a single "condensed" word combination.

Moreover, CNPs correspond to new terms, to some kind - of technical jargon as their being sometimes italicized proves. Kadler (1970) provides the following English compound taken from a text in Aerospace Engineering: liquid oxygen liquidhydrogen rocket powered single sta- te to orbit reversible boost system. Needless to say that French and Spanish would resort to a number of diffe- rent propositions and relative clauses while Russian - would use adjectival participles and national suffixes (cf. Tables 6, 7 and 8). As Chmelev (1965: 14) remarks; "As has been pointed out more than once in the literatu- re, particularly typical of our time are various forms of complex and abbreviated words, a part of which ex- presses generic concepts, but apparently most of which serve to name new objects and phenomena more precisely".*

Whereas in literature and especially in poetry, new - words are complex, in science, they are compound. If a scientist or a technologist needs to refer frequently - to something as a single object, event or entity, s/he will compose CNPs.

As was stated elsewhere (Salager: 1980-a), compounds - are mainly used to refer to something which is conceived of as a single entity, as an item in a class of its own.

* The translation is mine.

The most striking average length difference lies in the use of 4-and-5 word CNPs. They are respectively 20 and 7 times more frequent in ME than in GE. This means - that, although their average length is similar, their distribution differs from one literary genre to another (cf. graph 1). This difference is explained by the fact that, where the scientist would use a rather - lengthy CNP, the novelist would favor a more explicit - relative clause, the past participle and the preposition of. Table 5 illustrates this point with a few examples - from GE literature along with their possible formulation in scientific writing. Moreover, almost 90% of CNPs in GE (and also in TE) are 2-or 3-lexical unit CNPs (50% - each). On the contrary, ME seems to use the CNPs in so me inverse proportion to their length, which sounds mo- re logical according to Mandlebrot's rule of thumb.

THE RATIONALE OF COMPOUNDS

These characteristics correspond to the need for economy mentioned earlier because numerous compounds prove more economical than the corresponding phrases which - would use many function words, e.g., condensation loss is more concise than the loss caused by condensation; nozzle gas ejection space ship attitude control is brie- fer than the control of attitude of space ship by ejec- tion of gas through a nozzle.

TABLE 5
EXPLICIT PHRASES AND COMPOUND
EQUIVALENTS

Text #	GE	TE
6	Cylindral rollers made of reed amulets consisting of little dolls made of cotton.	reed cylindral rollers cotton little doll amulets ^a or little cotton doll amulets.
8	worker of rural families.	rural family workers.
3	stimulus that elicit a reflexive response.	reflexive response eliciting stimulus.
4	clause concerning the building trade.	building trade clause.
	the weekly earning of the poorest masons.	the poorest masons' weekly earnings.

^aThis example shows that compound formation results in an ambiguity of interpretation. If the word "little" were to be replaced by "fine", the following question would arise: what does "fine" refer to "cotton," "doll," or "amulet?"

TABLE 6

Noun Modification in English and Russian Compounds

English	Russian
Method of Measurement	Метод измерения
Measuring Instrument	Измерительный прибор
Degree of Protection	Степень защищённости
Protective Device	Защитительное устройство
Method of Test	Метод испытаний
Test Voltage	Испытательное напряжение
Speed of Rotation	Скорость вращения
Rotating Field	Еращающееся поле
Nitrogen Fixing Bacteria	Азотофиксирующие бактерии
Phosphorus Containing Ore	Фосфоросодержащая руда
Current Carrying	Несущий ток

TABLE 7

Linking Vowels in Russian Word-Compounds
and their English Equivalents

Russian Compound	Lexical Constituents	English
громкоговоритель	громкий говорить	loud to speak } loudspeaker
теплоёмкость	тёпло ёмкость	heat. capacity } heat capacity
высоковолтный	высокий волт-ный	high volts } HV
электродвигатель	электр- двигатель	electric motor } electric motor
шаровидный	шар вид-	sphere to see } spherical
нефтеносный	нефть носить	oil to carry } oil bearing
тёмнокрасный	тёмный красный	dark red } dark red

TABLE 8

Compound Formation. Comparative Study
Recapitulatory Table

Language	Examples
English	1. Steam (water vapor) 2. Sample pressure 3. Relative intensity measurement 4. Highly excited state 5. Polyphase series commutator motor 6. Explosion (or flame-) proof
Spanish	1. Vapor de agua 2. Presión de la muestra 3. Medida de intensidad relativa 4. Estado de excitación elevada 5. Motor polifásico en serie con colector 6. Anti deflagrante
French	1. Vapeur d'eau 2. Pression de l'échantillon 3. Mesure d'intensité relative 4. Niveau d'excitation élevée 5. Moteur polyphasé série à collecteur 6. Antidéflagrant
Russian	1. Пар 2. Давление образца 3. Относительные измерения напряжённости 4. Перенапряжённые режима 5. Многофазный электродвигатель 6. Взрывобезопасный
German	1. Wasserdampf 2. Testdruck 3. Relative intensitätsmessung 4. Hoherregter zustand 5. MehrphasenReihenschlussmotor 6. Explosionssicher

This underlines the difference between the compound and relative clause.

The difference between a copper electrode and an electrode made of copper is that the latter identifies the electrode in terms of certain attributes whereas the former expresses a new concept for which the language code has no name.

There is a semantic difference between the CNP banana curve and the related but not synonymous phrase a curve shaped like a banana. In the latter, the curve is identified by the reduced restrictive relative clause shaped like a banana to distinguish it from other curves, whereas the former is a new term in the language for a specific curve having other properties. In other words, the CNP is crystallized into a fixed expression owing a scientific meaning which the individual constituents do not have. Therefore, the communicative value of these two expressions is somewhat different. The scientific or technical writer resorts to compounds in the same way and for the same reason - as the poet has recourse to metaphors or alliterations. Both linguistic outputs are frozen expressions, standardized metaphors.

As Widdowson (1974: 290) mentions: "The poet brings together elements which are kept distinct in the language code to create new hybrids to refer to concepts for which the language code provides no name because they are not conventionally recognized".

Thus, as far as this problem is concerned the following conclusions can be drawn: a) the CNP average length is similar in ME and in GE; b) their frequency of occurrence is significantly higher in ME than in GE; c) their relative distributions are quite different in ME and GE and d) the more specialized the text, the longer the CNPs.

As Trimble (1977: 58) notes: "Technical compounds create a different kind of learning problem for the users of manuals. First, they are not a common lexical structure in many languages. Second, they do not all yield easily to a literal translation or to turning into simple phrases even to the point of often confusing the native speaker of English"; thus it would be worthwhile to carry out a more extensive study on CNPs formation in technical scientific writing because they portray the major difficulty in the reading of English scientific literature - (Salager, 1977; Harvey, 1980) and are the most susceptible to hinder the overall comprehension of the texts.

APPENDIX 1
ME SAMPLE TEXTS LISTING

2. Robbins, M., 1976.
Textbook of Pathology. pp. 310-316.
22. Combrinck - Graham, I., 1974.
Structural family therapy in Psychosomatic illness.
Clinical Pediatrics, vol. 13, N° 10. pp. 827-834.
23. Frishman, W. and Ribner, H., 1979.
Anticoagulation in myocardial infarction: modern
approach to an old problem. The American Journal
of Cardiology, vol. 43, pp. 1207-1212.
28. Wallace, D., and Rothwell, D., 1978.
The long-term follow - up in surgically treated -
vesicoureteric reflux. British Journal of Urology.
Vol. 50, pp. 479-484.
29. Svedershy, L., et al., 1979.
Immune Suppression by Cultured Lymphocyte Supernates
of Tumor-Bearing Hosts. Journal of Surgical -
Oncology. Vol. 12, pp. 343-352.
30. Wilson, D., Reeves, A., and Gazzaniga, M., 1978.
Division of the corpus callosum for uncontrollable
epilepsy. Neurology. N° 28, pp. 649-653.
32. Sato, T., 1980. Results of Esophageal Transection
for Esophageal Varices. The American Journal of -
Surgery. Vol. 139, pp. 204-209.

33. Goldman, S. et al., 1980.
Improved Exercise Ejection Fraction with Long-Term
Prazosin Therapy in Patients with Heart Failure. -
The American Journal of Medicine. Vol. 68, pp. 36-
44.
44. Harrison, T.,
Principles of Internal Medicine. 8th edition, pp.
437-441.
46. Donlon, J.V., et al., 1978.
Implications of Masseter Spasm after Succinylcholi-
ne. Anesthesiology. Vol. 49, N° 4, pp. 298-301.

These texts form a larger corpus (60 texts) used to
carry out a more extensive study on ME literature.

APPENDIX 2
GE SAMPLE TEXTS LISTING

1. Broudy, H.S., 1955.
Building a Philosophy of Education. New York:
Prentice Hall: 5.
2. Pedersen, H., 1962.
The Discovery of Language. Bloomington Indiana -
University Press: 241.
3. Munsinger, H., 1971.
Fundamentals of Child Development. New York: Holt,
Rinehart and Winston: 107.
4. Gimpel, J., 1976.
The Medieval Machine. New York: Holt, Rinehart and
Winston: 111.
5. Crichton, M., 1975.
The Great Train Robbery. New York: A. Knopf: 25.
6. Engel, F.A., 1976.
An Ancient World Preserved. New York: Crown Publi-
shers: 89.
7. Faulkner, D., 1976.
The chambered nautilus. National Geography Magazi-
ne, January: 38.
8. Barron, J., 1976.
KGB. New York: Bantam Books: 119.

9. Crichton, M., 1976.

Eaters of the Dead. New York: A. A. Knopf: 49.

10. Conan Doyle, A., 1927.

The Complete Sherlock Holmes, Vol. 1. New York:
Doubleday: 605.

APPENDIX 3

TE SAMPLE TEXTS LISTING

1. Pierce, J.R., 1975.
New trends in electronic communications. American Scientist. January-February: 31.
2. Sharnoff, M. and E.B. Iturbe, 1975.
g tensor of triplet benzophenone. The Journal of Chemical Physics 62: 145.
3. Stiefvater, O.L., 1975.
Microwave spectrum of propionic acid. I spectrum, dipole moment, barrier to internal rotation, and low-frequency vibrations of cis-propionic acid. - The Journal of Chemical Physics 62: 233.
4. Beveridge, G.S. and R.S. Schechter, 1970.
Optimization: Theory and practice. Tokyo: Mc Graw-Hill-Kogakusha, International Edition: 41-55.
5. Lissant, K.J., 1974.
Basic theory of emulsions. Emulsion and Emulsion Tech. Ed. K. Lissant, vol. 1. New York: Marcel Dekker: 387.
6. Aris, R., 1975.
The mathematical theory of diffusion and reaction in permeably catalysts. Chemical Engineering Kinetics. Oxford: Clarenton Press Oxford: 100.

7. Kittel, C., 1967.
Introduction to Solid State Physics. New York:
Wiley: 383-399.
8. Vanderziel, A., 1967.
Solid State Physical Electronics. Englewood Cliff:
Prentice Hall: 498-511.
9. Rose, R.M., et al., 1967.
Electronic Properties. New York: Wiley: 140-150.
10. Hayt, W., and J.E., Kemmerly, 1971.
Engineering Circuit Analysis. New York: Mc Graw-
Hill: 195-207.

APPENDIX 4
CNP EXAMPLES

- 2 - Word CNP
 - blood sample
 - complement response
 - laboratory procedure
- 3 - Word CNP
 - drug induced complications
 - six pound increase
 - bladder neck obstruction
- 4 - Word CNP
 - drug induced volume concentration
 - 2 minute urine collection
 - peak exercise ejection fraction
- 5 - Word CNP
 - six term uterine artery segments
 - long term follow up study
- 6 - Word CNP
 - iodine-125 fibrinogen leg scanning technique
 - 50 g. oral glucose tolerance curve.
- 7 - Word CNP
 - hand held Hewlett Packard APT-16 transducer.

REFERENCES

- 1.- BARTOLIC, L., 1978.
"Nominal Compounds in Technical English" in -
English for Specific Purposes: Science and Tech-
nology, eds: Trimble and Trimble. English Language
Institute Oregon State University.
- 2.- CHMELEV, P.H.
"O Nekotorykh Tendentsiakh Sovremenoi Russkoi -
Leksiki" v Razvitie Leksiki Sovremennogo Russkogo
Iazyka. ANSSSR. Moskva: Izd. Nauka: 1965. pp. 5-
17.
- 3.- GERR, S., 1942.
Language of Science: the Rational Functional lan-
guage of science and technology. Philosophy of
Science. IX, N° 2. pp. 146-151.
- 4.- HARVEY, A., 1980.
ESP/EST Chile. N° 8, p. 1.
- 5.- KADLER, E.H. 1970.
Linguistics and Teaching Foreign Languages. New
York: Van Nostrand Reinhold, Co.
- 6.- OVCHARENKO, V.M.,
"Konceptual'nai^Va semantičeskaia i semiotičeskaia
Celost'noist' termina" v Lingvističeskie Problemyi
Naučno-Tekničeskoi Terminologii. ANSSSR. Moskva,
Izd. Nauka 1970. 139-153.

- 7.- PALMER, H.E., 1968.
The Scientific Study and the Teaching of Languages. London; OUP.
- 8.- POLITZER, R.L., and F.N. Politzer, 1972.
Teaching English as a Foreign Language. Lexington Mass: Xerox College Publications.
- 9.- SALAGER, F., 1977.
Optimum Foundations of English Technical Literature and their Applications to the Comprehension Training of Non-English Speaking Scientists. Ph. D. Dissertation University of Texas at Austin, 1977. Published by Clearinghouse. OSU.
- 10.- -----, 1980 (a).
"Compound words in Technical Russian and technical English literature A comparative Study" in The Russian Language Journal. XXXIV, N° 118, 1, 45-50.
- 11.- -----, 1980 (b).
"The English of Medical Literature. Research - project in TESOL. Vol. 15, September 1981, N° 3.
- 12.- TRIMBLE, M.T. and L. Trimble, 1977.
"The development of EFL material for occupational English" in English for Specific Purposes.
An International Seminar. The British Council, pp. 52-71.

13.- WIDDOWSON, H.G. 1974.

"Literary and scientific uses of English" English
Language Teaching Journal, XXVIII, N° 4, 282-292.